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SNAKES

Aesculapian snake

Zamenis longissimus

Zamenis longissimus is a slender, non-venomous, diurnal ratsnake that reaches 110-160 cm and is one of the largest snakes in Europe. It is an excellent climber with a smooth, bronze-sheened back, lives in warm deciduous woodland and around old stone walls, and needs a cool winter rest to thrive. It is calm and trainable, but the winter rest makes it a snake for the somewhat experienced keeper.

Family: Colubridae Former name: *Elaphe longissima*

KEY FACTS

THE ANIMAL

Adult size	**110-160 cm** total length incl. tail
Weight	**350-900 g**
Lifespan	**15-25 years**
Active	**By day**
Lifestyle	**Arboreal and terrestrial**
Habitat	**Rocky terrain and temperate woodland and meadow**
Difficulty	**Intermediate**

CARE

Min. enclosure	**120 × 75 × 80 cm** L × W × H for 1 adult
Temperature, day	**24-29 °C**
Basking spot	**30-33 °C**
Temperature, night	**18-22 °C**
Humidity	**60-70%**
Water	**Water dish**
UVB	**Optional**
Winter rest	**3-8 °C** 13-22 weeks
Diet	**Vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**5-11 eggs**
Clutches per year	**1**
Incubation	**42-70 days** at 27-28 °C

PROTECTION AND PAPERWORK

CITES	**Not listed**
EU annex	**Not listed**
IUCN	**Least Concern (LC)**

About the species

Zamenis longissimus is a long, slender, non-venomous ratsnake with a small head, round pupils and smooth, glossy scales. Adults are uniformly coloured, most often olive-yellow, brownish-green or almost black, and many have white-edged scales that give the back a fine, metallic sheen. The belly is yellow to off-white, and the iris is amber to ochre. The scales on the underside have a sharp edge, which the snake uses as a foothold when climbing trees and rough walls.

Newly hatched young are about 30 cm and are patterned quite differently from the adults: pale green or brownish-green with darker spots and stripes along the back and sides, dark markings on the head and a yellow collar on the nape. The collar can remain on young adults, and the young therefore resemble young snakes of the genus *Natrix*. Adults typically reach 110-160 cm including the tail, a few up to 200 cm. Males become considerably longer than females, and an adult typically weighs 350-900 g. The species can live 25 years or more.

Naturally dark, reddish and albino animals occur, but morphs are not widespread in the trade. The southern Italian population was formerly regarded as a subspecies of *Z. longissimus*. It is now a separate species, *Zamenis lineatus*, and has paler colours and a reddish iris. In older literature the species is called *Elaphe longissima*. The species name *longissimus* is Latin for "the longest".

The snake on the rod of Asclepius, the ancient symbol of medicine, is probably this species. It was associated with the temples of the Greek god Asclepius.

Distribution and habitat

Zamenis longissimus lives in southern, central and eastern Europe and in Asia Minor. The continuous range covers most of France apart from the north, the northern Spanish Pyrenees, Italy (but not the far south or Sicily), the whole of the Balkans to Greece and Turkey, and parts of central and eastern Europe up to about latitude 49 degrees north: Switzerland, Austria, Hungary, Slovakia, Romania, southern Poland and south-western Ukraine.

In addition there are isolated populations in Germany (including the Taunus, the Odenwald and near Passau and the Salzach) and in north-western Czechia, which is the northernmost known natural occurrence of the species. Other populations live south of the Caucasus along the eastern coast of the Black Sea, and small, isolated populations are found in eastern Turkey and near Lake Urmia in north-western Iran.

The species once lived much further north, as far as Denmark, during the warm period 8,000-5,000 years ago. Three animals were collected in southern Zealand between 1810 and 1863, probably from a now extinct remnant of that population. The map shows the original range.

> **Native range:** Andorra, Albania, Austria, Azerbaijan, Bosnia & Herzegovina, Bulgaria, Switzerland, Czechia, Germany, Spain, France, Georgia, Greece, Croatia, Hungary, Iran, Italy, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Russia, Slovenia, Slovakia, Turkey and Ukraine.

HABITAT

Zamenis longissimus prefers warm, moderately moist and sunny deciduous woodland, woodland edges, clearings, scrub and meadows in hilly or rocky terrain. It is also found in riverside woodland, but not in marshes, and it avoids open plains and intensively farmed land. It is often associated with human buildings: old stone walls, ruins, sheds and gardens provide shelter, basking spots and mice. In the northernmost parts of the range it depends on such buildings, and on compost and wood piles, to get enough warmth for eggs and winter quarters.

The snake is diurnal and spends a lot of time in hiding. In central Europe it emerges in late March or early April, basks a great deal in April and is most active from the second half of May to the second half of July. The preferred air temperature is about 20-26 °C, and above 27 °C it moves out of direct sun. It climbs vertically up tree trunks and has been seen several metres up and in the roof spaces of buildings. In winter it hibernates, in the wild at about 5 °C.

Care

THE ENCLOSURE

An adult *Zamenis longissimus* needs an enclosure of at least 120 × 75 × 80 cm (length × width × height). The species climbs a great deal, so height is just as important as floor area, and bigger is always better. The species is kept singly. The enclosure must be secure and have a lid or door catch that can be locked: the snake is a skilled escape artist and exploits every gap. Front-opening doors make handling and maintenance calmer for the snake than opening from above.

Young and subadult snakes can be kept in smaller enclosures but grow quickly. A subadult of 50-100 cm needs about 100 × 50 × 60 cm, and the smallest young do well in a small secure box with snug hides.

Furnish with at least two hides of stone, bark or wood, one in the warm end and one in the cool end, plus thick branches, cork panels against the walls and artificial or live plants, so the snake can climb and withdraw. The substrate must be deep enough for the snake to burrow, for example a mix of topsoil, coconut fibre and a little sand, with one corner kept slightly damp. Avoid pine and cedar shavings, because the aromatic oils can harm the snake. Remove faeces at once, and replace the substrate completely every few weeks.

TEMPERATURE

There must be a clear temperature gradient. During the day in the active season the background temperature should be 24-29 °C, and under the heat source there should be a basking spot of 30-33 °C. The temperature must not exceed 35 °C anywhere. The cool end can be 22-24 °C. At night the temperature should fall to 18-22 °C, and the heat is switched off. This matches the species' natural daily rhythm, in which it prefers about 20-26 °C and avoids intense heat.

Use a halogen spotlight or a ceramic heat emitter over a mesh and a thermostat that controls all heat sources. A heat mat can be used under the substrate near a hide, but only with a thermostat. Measure with digital thermometers with the probe at the basking spot and in the cool end, and keep the heat sources out of the snake's reach so it cannot burn itself.

The species needs a cool winter rest every year. It is described under Breeding and is also important for animals that are not to be bred. During the winter rest the snake does not eat, and that is normal.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should be 60-70 %, with one corner of the substrate kept slightly damp, because the species comes from moderately moist woodland regions and not from a tropical climate. Mist lightly once a day, so that the enclosure dries out again during the day, and ensure good ventilation. A constantly wet substrate and still air cause mould and respiratory infections.

A large, stable bowl of fresh water must always be available. The snake drinks from the bowl and also lies in it, especially before shedding. Change the water daily. The snake sheds once or twice a year in the wild, and growing young shed more often. A damp hide with moss or wet kitchen paper helps if the skin needs softening.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

Zamenis longissimus is diurnal and needs a clear day and night. The light is on for 12-14 hours a day in the active season, controlled by a timer, and is shortened before the winter rest. A night light is unnecessary.

UVB has not been documented as necessary for the species, but it is a diurnal basker, so a weak UVB tube over the basking spot benefits its wellbeing. Aim for Ferguson zone 2 and a UV index of no more than 2-3 at the basking spot, with shade and hides in the rest of the enclosure. A T5 tube should be replaced after 12 months, because the UV output falls even though the tube still lights. Glass and plastic in front of the tube block UVB.

Read more: Lighting and UVB

FEEDING

Zamenis longissimus eats small mammals. In the wild 90 % of the prey is mammals, especially wood mice, mice and shrews, and the rest is mainly nestling birds and birds' eggs. In the enclosure it is fed whole, frozen and thawed mice and small rats. The prey should be the same width as the widest part of the snake. Young take newborn mice (pinkies) and then follow the size ladder upwards. Adults take adult mice or small rats. Live prey is not recommended, because the rodent can injure the snake.

Feeding intervals are the same as for other ratsnakes of the same size:

- Newly hatched young: every 5-7 days.
- Subadults: every 7-10 days.
- Adults: every 10-14 days.

Thaw the prey slowly in the fridge, and warm it to about 38 °C in a sealed bag in warm water just before feeding. Offer it in the evening, when the snake is calmest. Weigh the snake regularly, and cut back if it becomes round. Whole prey provides a complete diet, so supplements are not necessary, but farmed prey can be short of vitamin D if the snake is kept without UVB.

Appetite falls naturally in autumn, and some animals stop eating altogether before the winter rest. This is normal and should not be countered with more heat or force-feeding. New animals can take a couple of weeks to settle in before they eat.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Zamenis longissimus is calm and curious and usually becomes tame with regular, gentle handling. It moves slowly and purposefully through the hands. Let a new animal settle for a week and eat regularly before it is handled, and keep the first sessions to five to ten minutes. Support the body at several points, approach from the side and never grab the tail. Wait at

least 48 hours after a meal, and do not handle the snake while it is shedding either.

Young animals are more nervous than adults. If an animal feels cornered, it can rear up threateningly, make chewing movements with its mouth and bite.

The species is diurnal and explores the whole enclosure, especially branches and high places, and it readily withdraws into hiding. It must be kept singly, siblings included: animals housed together suffer stress and poorer appetite and gain nothing from it.

Breeding

SEXUAL MATURITY AND SEXING

The male becomes considerably longer than the female and has a relatively longer tail with a broader base. In young animals the sex cannot be seen from the outside, so sexing should be carried out by an experienced person or a vet. In the wild the animals become sexually mature at a length of 85-100 cm, when they are about four to six years old. The animal must be fully grown and in good condition before it is bred. The female must be in better condition than the male, because egg-laying drains her.

MATING

Breeding requires a cool winter rest. The animals must be healthy and well fed and have an empty gut when they are cooled. Cool gradually over two weeks to 3-8 °C, keep them dark and undisturbed for 3-5 months with water available, and then warm them up over a couple of weeks. The length of the rest depends on the animals' origin: animals from northern populations need the longest. After warming up they are fed well.

Mating takes place in spring after the winter rest, in the wild from mid May to mid June. Males fight over the female by pressing each other's heads down, and they must therefore not be housed together. The courtship is an elegant dance in which the front of the body is raised in an S-shape and the tails are twisted together, and the male may grip the female's head.

EGG-LAYING AND CLUTCHES

The female lays eggs four to six weeks after mating. The clutch is typically 5-11 eggs, with extremes of 2 and 20. In the wild a warm, damp spot where plant material rots is chosen, for example under hay, in rotting wood, in compost or in old stumps, and several females may share the same site. One clutch is laid per year.

Give the female a laying box with damp sphagnum or vermiculite and an opening, so she can burrow in. Move the eggs to the incubator after laying, without turning them. Give the female plenty of food afterwards.

Read more: Incubating eggs

INCUBATION

The eggs are laid in a box of slightly damp vermiculite or perlite with small ventilation holes and incubated at 27-28 °C; the incubation temperature has not been documented for the species and is borrowed from *Pantherophis guttatus*. The substrate should be evenly damp, but not wet. Hatching takes place after about eight weeks, between six and ten weeks. The young cut their way out with an egg tooth and often stay in the egg for a day or two before they emerge fully. Do not discard eggs that collapse or go mouldy until it is clear that they are dead.

REARING THE YOUNG

Newly hatched young measure about 30 cm and shed one to three weeks after hatching, before they eat. Keep them singly in small, secure enclosures with snug hides, a damp hide and a water bowl, at the same temperature as adults, but without a cold winter in the first year. Offer a newborn mouse every 5-7 days once they have shed. In the wild the young only exceptionally eat in the year of hatching, and some young do not take food in the enclosure for the first few months either. If the young snake is healthy and in good condition, this is no reason for force-feeding. Weigh and measure the young regularly. Young must not be kept together.

Health and common mistakes

Zamenis longissimus is hardy when temperature, humidity and winter rest are right. The typical mistakes are:

- Respiratory infection with wheezing breathing, mucus from the nose and mouth or an open mouth. It is often caused by excessive humidity, poor ventilation or too low a temperature.

- Poor shedding with retained skin on the eyes and tail tip when the air is too dry. Provide a damp hide and a water bowl.
- Mites, which show as small dots on the snake and in the water bowl, especially in newly acquired animals. They require treatment and thorough cleaning.
- Obesity from feeding too often. Weigh the snake regularly and adjust the interval.
- Regurgitation if the snake is handled too close to a meal. Leave it in peace for at least 48 hours after feeding.
- Winter rest for animals that are ill, thin or have food in the gut. Only hibernate healthy, well-fed animals.
- Burns from unguarded heat sources.

A healthy animal has clear eyes, smooth glossy skin and a firm grip. Contact a vet with experience in reptiles if the snake loses weight, does not eat outside the winter rest, has breathing problems or has changes in the skin.

Always ask someone who knows

This guide is a good place to start, but it cannot replace experience. Animals differ, and much of what matters most is learned from people who have kept the species for years. Talk to a breeder, an experienced keeper or a vet who knows reptiles and amphibians before you get the animal - and again if anything looks wrong.